April 1948 E-745

United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine

CORN EARWORM RESISTANCE IN SWEET CORN INBREDS AND HYBRIDS

By E. V. Walter
Division of Cereal and Forage Insect Investigations

Much effort has been made during the past several years to find inbreds and hybrids of sweet corn resistant to the corn earworm (Heliothis armigera Hbn.). This work has been done in cooperation with the sweet corn breeders of several State agricultural experiment stations and the Bureau of Plant Industry, Soils, and Agricultural Engineering of the U. S. Department of Agriculture.[1] Some of the information obtained has been assembled in this paper for the convenience of plant breeders and entomologists interested in corn improvement.

The following tables show the general reaction of some of the inbreds and hybrids tested. Many experimental inbreds and hybrids, including some of those listed in the tables, have been discarded because of agronomic or other weaknesses. Most of those discarded reacted as intermediate or susceptible to earworm injury, although a few that were poor agronomically appeared to have a rather high degree of resistance. Inbred selections in some of these are being attempted.

---

[1] Seed used in these tests has been furnished by W. Ralph Singleton, Connecticut Agricultural Experiment Station; Walter A. Huelsen, Illinois Agricultural Experiment Station; E. S. Haber, Iowa Agricultural Experiment Station; J. B. Park, Ohio Agricultural Experiment Station; Glenn M. Smith, U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering and Purdue University Agricultural Experiment Station; Charles F. Poole, U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering, Charleston, S. C.

In addition to the material furnished by the several breeders, a few varieties and hybrids have been purchased in the open market for testing. A few selections made by the writer and a few made in cooperation with R. A. Blanchard of this Bureau and R. O. Snelling of the Bureau of Plant Industry, Soils, and Agricultural Engineering are included. A number of experimental crosses between tested inbreds have been made by members of these two Bureaus for our studies on inheritance of resistance. These are included in table 3.

APR [illegible]

The reaction of many of the strains to natural infestation was observed at Weslaco, Tex., where a heavy and quite uniform infestation could be expected each year. At Lafayette, Ind., and Urbana, Ill., where there was less likelihood of a uniformly heavy infestation, the natural infestation was supplemented by the placing of 3 newly hatched larvae on the silks of each ear 3 to 5 days after emergence, and 3 more similar larvae on the silks of the same ears 2 to 3 days later. The damage was usually appraised at the roasting-ear stage after the larvae had left the ear.

Most varieties reacted the same to the natural infestation as they did to the artificial or supplemented infestation. There were a few exceptions, however, the most notable of which was inbred P51, which was highly resistant to natural infestation wherever tested, but reacted as a susceptible when the larvae were placed on the ears under the selfing bags. It reacted as a susceptible when used in crosses. Egg counts showed as many eggs on P51 as on other inbreds. Such exceptions are noted in table 1.

After the larvae had matured, the ears were gathered and husked to evaluate the damage. The infested ears were placed in 5 classes, according to the amount of feeding done, as follows: Class 1, tip only; class 2, kernels to ½ inch below the tip; class 3, kernels to 1¼ inches below the tip; class 4, kernels to 2½ inches below the tip; and class 5, kernels exceeding 2½ inches below the tip. Butt or side injury was placed in one of the above classes, depending on the location and amount of trimming necessary to make a usable ear. The percentage of ears in each class could then be determined. Counts of the injured kernels on several thousand ears, after dividing into classes as described above, showed the number of average-size kernels destroyed to be approximately as follows: Class 1, less than 1; class 2, 10; class 3, 20; class 4, 30; and class 5, 40. Multiplying the percentage of ears in each class by the average number for the class and adding the products gave a sum which tests have shown to closely approximate the actual number of average-size kernels destroyed per 100 ears. This sum, or injury index number, can be directly compared with that of another sample to show which is the more resistant.

The injury index number varied slightly from one test to another within the same variety. Since some of the varieties listed in the tables were tested as many as eight times, the index number is not given. It was used, however, in compiling the tables, and the variety was listed as resistant, intermediate, or susceptible, with supplementary notes to denote the highly resistant strains. A strain was considered resistant or susceptible in our tests according to whether its injury index number fell below or above the median one-third for all strains in the test.

The factors responsible for resistance are not well understood. The tables show, however, that with few exceptions the degree of resistance found in a single cross is in proportion to that found in the inbreds. The plant breeder may be able to combine two or more of the known resistance factors to produce superior inbreds and hybrids. Many of the inbreds listed in table 1 have been tested in several crosses, so that we have some indication of their reaction in breeding. See tables 2 and 3. Where enough crosses have been tested, the reaction is shown in the "Remarks" column in the table.

Many additional lines have been tested for earworm resistance but have been dropped from the breeding programs for various reasons. A few other lines that have been discarded by the originating breeders are listed in the tables, because they may still be under test by other breeders and cooperators.

A few open-pollinated varieties and a few hybrids produced by commercial breeders were purchased in the open market and tested. These varieties are shown in table 4.

About 90 inbreds and hybrids of popcorn have been tested for earworm resistance. Consistent differences in the reaction to earworm injury have been noted in many of those tested, but so far none have shown a high degree of resistance. They are not listed in this paper.

The reactions and resistance of sweet corn inbreds and hybrids to corn earworm injury follow.

Table 1.--Reaction to earworm injury and present status of sweet corn inbreds tested for resistance to the corn earworm.

Source and Inbred Number	Number of Tests			Present Status of Inbred[1]	Remarks[2]
	Resistant	Intermediate	Susceptible		
		Yellow Inbreds			
Illinois					
59e	-	1	-	D	
60b	-	1	-	E	
62a	-	-	1	E	
64b	-	1	-	D	
66a	3	-	-	E	Breeds moderate resistance.
67a	1	-	-	D	
68a	1	-	-	E	Breeds susceptible.
70a	2	-	-	E	
71a	2	-	-	RC	Breeds moderate resistance.
72a	3	2	-	E	do.
72b	-	1	-	E	Crosses test as other parent.
72c	-	1	-	E	
73a	-	1	-	E	
73c	1	2	-	R	Breeds moderate resistance. Used in Golden Hybrid No. 10.
74a	-	1	-	E	
75a	-	2	1	E	
76a	-	2	-	D	Breeds moderate resistance.
76b	-	1	-	D	
76d	-	2	-	E	
78a	3	-	-	D	Breeds intermediate.
80a	-	1	-	D	
80b	2	-	-	E	do.
82a	-	1	1	D	
83a	1	1	1	D	
84a	1	-	-	D	
85a	1	3	-	E	
85b	1	1	-	E	
85c	-	1	-	E	Breeds susceptible.
85d	2	3	-	E	Breeds moderate resistance.
85e	1	-	1	D	
86a	-	-	1	D	Breeds susceptible.
86b	-	1	-	D	
86c	-	1	-	E	do.
86d	-	2	-	E	Breeds moderate resistance.
86e	1	1	-	E	do.
86f	-	1	-	D	
87a	-	3	-	E	Breeds susceptible.
87b	-	-	1	E	
89a	-	2	-	R	Breeds intermediate.
91a	2	-	-	E	do.
92a	-	1	1	E	

Table 1.--(Continued)

Source and Inbred Number	Number of Tests			Present Status of Inbred[1]	Remarks[2]
	Resistant	Intermediate	Susceptible		
Yellow Inbreds					
Illinois					
93a	-	3	-	D	
94a	-	-	2	D	
95a	-	2	-	D	
96a	2	1	-	D	Breeds resistance.
97a	-	1	-	D	
98a	2	-	-	E	
98b	1	-	-	E	
99b	-	1	-	D	
101a	-	1	-	E	
101b	-	-	1	D	Breeds very susceptible.
101c	-	1	-	D	
101d	1	-	-	E	Breeds intermediate.
101e	1	1	-	E	
101f	-	-	1	D	
101h	-	1	-	D	
101j	-	1	-	D	
101l	-	1	-	D	do.
101n	-	-	1	D	
101q	-	2	-	R	Breeds moderate resistance. Used in Golden Hybrid No. 10.
101r	-	1	1	D	
101s	-	1	-	D	
101t	4	4	-	E	Breeds moderate resistance.
101u	1	1	1	E	
101v	-	-	1	E	
101w	-	2	-	D	
101x	-	2	-	E	
101y	1	2	-	D	
101z	-	1	-	E	Breeds intermediate.
a101	-	2	-	E	
d101	2	-	-	E	Breeds susceptible.
e101	-	1	-	E	
f101	-	-	1	E	
g101	2	1	-	E	Breeds intermediate to susceptible.
103a	3	-	-	E	Breeds moderate resistance.
103b	1	-	-	E	
103c	-	-	1	E	
103d	-	-	2	D	
103e	1	1	-	E	
103g	1	-	-	E	
103h	-	1	-	E	
103j	-	1	-	E	

Table 1.--(Continued)

Source and Inbred Number	Number of Tests			Present Status of Inbred[1]	Remarks[2]
	Resistant	Intermediate	Susceptible		
		Yellow Inbreds			
Illinois					
103k	-	-	1	E	
103l	-	1	-	E	
103m	-	1	-	E	
103n	-	1	-	E	
104c	-	1	-	RC	Breeds moderate resistance.
104d	-	-	1	E	
104e	-	1	-	E	
104f	-	-	1	D	
104h	-	-	1	D	
104j	-	-	1	E	
104k	-	1	-	E	
104l	1	1	-	E	
104m	-	-	1	E	
104q	-	1	-	E	
105a	-	1	-	E	
106a	-	1	-	E	
106b	-	1	-	E	
107a	3	1	-	E	One of most resistant yellow inbreds. Crosses test as other parent.
107b	-	-	1	E	
108a	-	-	1	D	
108e	-	-	1	E	
108f	-	-	1	E	
108g	-	-	1	E	
109a	-	1	-	E	
110a	-	1	1	E	
110d	-	-	1	E	
110f	-	1	-	D	
110g	-	1	-	E	
110h	-	-	1	E	
110j	-	-	1	D	
111a	-	-	1	D	
111b	-	1	-	D	
112a	-	2	-	E	
112b	-	1	-	E	
112c	-	-	1	E	
112d	-	2	-	E	
112e	1	1	-	E	
112f	-	1	-	E	
112g	-	1	-	E	
112h	-	1	-	E	
112j	-	1	-	E	

Table 1.--(Continued)

Source and Inbred Number	Number of Tests			Present Status of Inbred[1]	Remarks[2]
	Resistant	Intermediate	Susceptible		
		Yellow Inbreds			
Illinois					
113a	-	1	1	E	
113b	-	1	-	E	
113c	1	1	-	E	
113d	-	2	-	E	
113e	-	1	-	D	
113f	-	1	-	E	
113g	-	1	-	E	
113h	1	-	-	E	
113j	-	1	-	E	
113k	1	-	-	E	
113l	-	-	1	E	
114a	-	-	1	E	
Indiana					
P14	-	2	2	R	Breeds susceptible.
33A-1	-	1	1	E	
35(6)1	-	2	-	RC	
35(6)2	-	2	-	RC	
35B	-	1	-	E	
P39	-	6	-	R	do.
P39A	-	1	-	R	do.
P39B	-	1	1	E	do.
P39C	-	-	1	R	
P39-10	-	-	1	R	Early, diminutive P39 selection. Breeds susceptible.
P51	2	2	2	R	Resistant to natural infestation only. Breeds susceptible.
P51B	1	3	1	R	do.
268	-	-	1	RC	
299	1	1	-	E	
336	-	-	1	E	
353	1	3	-	E	
354	-	1	-	E	
357	-	-	1	E	
621	-	-	1	E	
655	-	-	1	E	
661	-	1	-	E	
662	3	-	-	E	One of most resistant yellows.
664	1	-	-	E	
667	1	-	-	E	
685	-	1	-	E	
686	-	1	-	E	
687	1	-	-	E	
688	1	1	-	E	

Table 1.--(Continued)

Source and Inbred Number	Number of Tests			Present Status of Inbred[1]	Remarks[2]
	Resistant	Intermediate	Susceptible		
		Yellow Inbreds			
Indiana					
695	-	1	-	E	
703	-	1	-	E	
724	-	-	1	E	
1308	-	1	2	E	Breeds susceptible.
1313-1-1	-	-	1	E	
1313-1-2	3	-	-	E	
La1(3)1	-	-	2	E	
La1(3)3	2	-	1	E	
La1(3)23	1	2	-	E	
La1(3)221	1	-	1	E	
La2(3)3	1	1	-	E	
La2(3)11	1	1	1	E	
La2(3)21	2	1	-	E	
La2(3)32	2	1	-	E	
La2(3)52	-	-	2	E	
Iowa					
IP39	-	3	-	R	Reacts similar to P39.
I45	3	6	-	R	Breeds moderate resistance.
60	-	1	1	R	Breeds susceptible.
467	-	3	-	E	Breeds resistance.
2019	-	1	1	R	Breeds moderate resistance.
2021	-	-	1	R	
2052	-	-	1	E	
2067	-	1	-	E	
2174	1	1	-	R	Breeds resistance.
Wx2153-1	-	1	-	E	do.
2000	-	-	-	E	Highly resistant in 4 combination
2166A	-	-	-	R	do.
5055	-	-	-	E	Intermediate in 3 combinations.
6014	-	-	-	E	Resistant in 2 combinations.
051K2A	-	-	-	E	Resistant in 1 combination.
Ohio					
E13	4	-	-	RC	Breeds resistance.
26	-	1	-	E	
28	1	-	-	E	
29	-	2	-	E	
39K1	1	1	-	D	
39K3	-	1	-	E	
51K1	-	2	1	RC	
51K2-115	1	-	-	R	Used in Ohiogold 1, 2, & 4.

Table 1.--(Continued)

	Number of Tests			Present Status of Inbred[1]	
Source and Inbred Number	Resistant	Intermediate	Susceptible		Remarks[2]
		Yellow Inbreds			
Ohio					
51K2-123	1	1	-	E	
51K2-Scharff	1	-	-	E	
E51	-	2	-	E	
52	-	1	-	E	
94b	-	-	1	E	
G192-74	-	-	2	E	
BE&PQ					
La2W	4	2	-	E	Breeds resistance.
		Country Gentleman Inbreds			
Illinois					
1f	3	-	-	R	Breeds intermediate. No longer used. Discarded.
1s	-	2	-	R	Breeds susceptible. No longer used.
3d	-	1	-	R	No longer used.
3f	-	1	-	R	No longer used. Discarded.
3h	-	3	-	R	do.
3j	1	-	-	R	No longer used.
3p	1	-	-	R	Very resistant. No longer used.
5a	2	1	-	R	Original release. Breeds intermediate.
5d	-	1	-	D	
5j	5	1	-	R	Present selection used in Illinois 5 x 10.
5k	1	2	-	E	
5l	-	1	3	E	
5w	-	2	-	D	
5x	1	-	-	D	
b5	-	1	1	D	
d5	-	-	1	E	
g5	-	1	-	E	
h5	2	-	-	E	
j5	-	1	-	D	
k5	-	2	-	E	
l5	-	1	-	E	
6a	-	3	2	R	Used in Illinois 5 x 10.
6h	1	-	-	D	
6j	1	-	-	E	
6k	1	-	-	E	
6l	-	-	1	E	
6m	-	-	1	E	
6n	-	-	1	E	

Table 1.--(Continued)

Source and Inbred Number	Number of Tests			Present Status of Inbred[1]	Remarks[2]
	Resistant	Intermediate	Susceptible		
Country Gentleman Inbreds					
Illinois					
8c	-	1	2	R	Used in Illinois 8 x 6. Breeds susceptible.
8d	-	-	1	E	
8e	-	1	-	D	
8f	-	-	1	D	
8g	-	1	-	E	
8h	-	-	1	E	
8j	-	-	1	E	Breeds susceptible.
8k	-	-	1	E	
8l	-	-	1	E	
8m	-	1	-	E	
10a	-	1	3	R	Original release.
10d	-	2	1	E	
10e	-	1	-	D	
10f	-	1	1	E	
10g	-	1	1	E	Breeds susceptible.
10h	-	2	-	E	
10j	1	3	-	E	
10l	-	-	1	D	
10n	1	2	-	E	
10p	-	1	2	E	
10q	-	1	-	E	
10r	-	-	2	E	
10s	-	-	1	E	
15b	-	-	1	R	Not used at present.
15h	-	-	1	E	
18a	-	3	-	D	
18b	-	1	-	R	Used in Illinois Hybrid No. 13.
19a	1	2	-	E	
19b	1	1	-	D	
20a	-	1	-	D	
21a	-	1	-	E	
21b	-	1	-	E	
21c	-	1	-	E	
21e	4	1	-	E	
22a	1	-	-	E	
24a	-	1	-	D	
24b	-	1	-	D	
24c	-	1	-	E	
24d	-	1	-	E	
24e	-	1	-	E	

Table 1.--(Continued)

Source and Inbred Number	Number of Tests: Resistant	Number of Tests: Intermediate	Number of Tests: Susceptible	Present Status of Inbred[1]	Remarks[2]
		Country Gentleman Inbreds			
Illinois					
27a	4	3	-	R	Breeds resistance. Used in Illinois Hybrids Nos. 13 & 14.
28a	1	2	-	E	
29a	2	-	-	D	
31a	-	5	-	R	Breeds intermediate. Used in Illinois Hybrid No. 14.
31b	-	1	-	E	
32a	-	1	-	D	
34a	1	2	-	E	
35a	2	1	-	E	
36b	-	-	2	E	
38a	-	1	-	E	
39a	3	-	-	E	
41a	-	1	-	E	
42a	-	1	-	E	
43a	-	1	1	E	
44b	2	3	-	R	Used in Illinois Hybrid No. 15.
45a	-	6	-	E	
46b	-	2	-	E	
46c	-	1	-	E	
47a	-	3	-	R	Used in Illinois Hybrid No. 15.
48a	-	2	-	E	
48b	-	2	-	D	
50a	1	1	-	D	
200d	1	3	-	E	
200f	-	-	2	E	
200k	2	-	-	E	Highly resistant. Breeds susceptible.
Indiana					
FR1	-	2	-	E	
FR14	1	-	-	E	
FR34	4	-	-	R	Breeds moderate resistance.
10	-	1	-	E	
22-2	3	3	-	R	do.
29	-	1	-	E	
30(17)1	-	2	-	E	
347	-	3	1	E	Breeds very long ear. Some resistance.
348	-	1	1	E	
534	-	1	-	E	

Table 1.--(Continued)

Source and Inbred Number	Number of Tests			Present Status of Inbred[1]	Remarks[2]
	Resistant	Intermediate	Susceptible		
		Country Gentleman Inbreds			
Indiana					
732(5)KU	1	-	-	E	
6267	-	-	1	E	
6355	-	1	3	R	
6532	2	-	-	D	
6609	-	1	-	E	
6684	1	-	-	D	
7212	-	1	-	E	Breeds susceptible.
7685	1	1	-	D	
7710	1	2	-	R	
8035	1	-	-	E	Breeds resistance.
8065	2	-	1	D	
8098	2	1	-	R	
8111	-	-	1	D	
8203	-	1	2	R	
8225	1	1	-	D	
8339	-	-	2	D	
8344	4	-	-	R	do.
Iowa					
1445	2	-	-	R	
1627	-	1	-	R	
2508	2	-	-	R	
2730	-	1	1	R	
4011	2	-	-	E	Highly resistant. Crosses test as other parent.
4024A	2	-	-	E	Highly resistant. Crosses test as other parent.
4040	1	-	-	E	
4060	-	1	-	E	
		Evergreen Inbreds			
Illinois					
11a	-	-	1	R	Original release.
11b	-	1	-	E	
11c	-	3	-	E	
11d	-	3	-	R	Used at present.
11e	-	-	1	E	
13b	-	3	-	E	
13c	-	1	-	R	
13d	-	-	1	D	

Table 1.--(Continued)

Source and Inbred Number	Number of Tests			Present Status of Inbred[1]	Remarks[2]
	Resistant	Intermediate	Susceptible		
		Evergreen Inbreds			
Illinois					
13h	-	1	1	D	
14a	1	1	-	R	Original release.
14b	-	1	1	D	
14d	1	2	-	E	
14g	1	-	-	R	Used at present.
14h	-	1	-	D	
14k	1	-	-	E	
14l	-	1	-	D	
14m	-	1	-	E	
14n	4	-	-	E	Very resistant. Breeds resistance.
14p	1	-	-	D	
52a	-	2	-	E	
55a	-	1	-	R	Original release.
55b	-	1	-	D	
55c	-	3	-	D	
55d	-	1	-	R	
55e	-	1	-	E	
57a	-	-	5	E	
57b	-	-	5	E	
58a	-	2	-	E	
Indiana					
119	1	2	-	E	
651(3)1W	-	1	-	E	
1009-8	-	-	1	E	
1014	-	2	-	E	
7600	-	2	-	E	
8449	1	2	-	E	
B1-1	-	1	1	E	
B1-21	-	1	1	E	
Iowa					
3001	-	2	-	R	
3002	-	2	-	E	
3005	1	1	-	R	
3006	-	2	-	R	
3044	-	1	-	E	
Ohio					
22G	1	-	1	D	
40	-	-	1	E	
42	-	-	1	D	
44	-	2	-	E	
45	1	2	-	E	
AM-1-1-1	-	-	2	E	

Table 1.--(Continued)

Source and Inbred Number	Number of Tests Resist-ant	 Inter-mediate	 Suscept-ible	Present Status of Inbred[1]	Remarks[2]
		Evergreen Inbreds			
BPISAE-South Carolina					
2d-2d-0d(Sel)	6	-	-	E	Very resistant. Breeds resistance.
2d-2d-1d(Sel)	3	1	-	E	
26-8-3-7a-1-1	-	-	1	E	
26-8-3-7a-5-2	1	-	-	E	
53-4a-1-1-2-2	2	2	-	D	
80-11-5b-5a-1-2b	1	-	-	E	
81-1-3-3-2-11	6	-	-	E	Breeds resistance.
BE&PQ & BPISAE (coop.)					
241-U1-U3-U1-B	2	3	-	E	
471-U6-A1-U2	5	1	-	E	do.
471-U12-U3-B	-	1	-	E	
471-U12-U5-B	3	1	-	E	

---

[1] Present status of the strain as given by the breeder. E - experimental, R - released to commercial trade, RC - release contemplated, D - discontinued or discarded by originating breeder, may still be carried by others.

[2] Remarks concerning resistance and breeding for resistance should be credited to the writer. All others should be credited to the breeder who supplied the seed.

Table 2.--Reaction to earworm injury and present status of sweet corn hybrids tested for resistance to the corn earworm. Strains furnished by breeders at various experiment stations.

Source and Hybrid Pedigree	Number of Tests			Present Status of Hybrid[1]
	Resistant	Intermediate	Susceptible	
Yellow Hybrids				
Connecticut				
C22 x C6	-	1	-	D
C22 x C23	-	1	1	E
C22 x C42	-	-	1	E
C35 x C42	-	1	-	E
C27 x C6	-	1	-	D
C31 x C6	-	1	-	D
850-5 x C6	-	1	-	D
936-18 x C6	-	1	-	D
C53 x E13	1	-	-	E
C68 x E13	2	-	-	RC
C88 x E13	1	-	-	E
C53 x US34	1	-	-	E
C65 x US34	1	-	-	E
C81 x C68	-	1	-	E
KY1 x C68	-	1	-	E
31-1 x KY1	-	1	-	E
Carmelcross(P39 x C13)	-	1	-	R
Carmelcross(C13 x C30)	-	1	-	R
Golden Cross(P39 x C42)	-	1	-	D
Golden Mammoth x C87	-	1	-	D
Golden Stowell (C53 x C65)	-	1	-	RC
Lee (P39 x C37)	-	1	-	R
Lincoln (P39 x C22)	-	1	-	R
Lincoln (P39 x C23)	-	1	-	R
Big Lincoln (C31 x C23)	-	1	1	R
Yellow Hybrids				
Connecticut				
Marcross (C13-53 x C6)	-	1	-	R
Marcross (C13-95 x C6)	-	-	1	R
Old Hickory (C31 x C13)	-	-	1	R
Purple Cross(C69 x C38)	-	1	-	R
Wilson (C31 x 87)	-	1	-	R
Wilson (C31 x 88)	-	-	1	R
Illinois				
66a x 71a	-	1	-	E
66a x 85d	-	-	1	E
71a x g101	-	1	-	E
72a x 73c	-	1	-	E
72a x 87a	1	-	-	E
72a x 89a	-	1	-	E
72a x 101d	1	-	-	E
72b x 73c	1	-	-	E
72b x 85c	1	-	-	E
72b x 87a	-	1	-	E
72b x 101d	-	1	-	E
73c x 85c	-	1	-	E
73c x 87a	-	1	-	R
73c x 101d	1	-	-	E
73c x 101q	2	2	-	R
76a x 85d	1	-	-	E
76a x 89a	-	1	-	E
76a x 96a	-	1	-	E
76a x d101	-	1	-	E

Table 2.--(Continued)

Source and Hybrid Pedigree	Number of Tests: Resistant	Number of Tests: Intermediate	Number of Tests: Susceptible	Present Status of Hybrid1/
Yellow Hybrids				
Illinois				
78a x 85c	-	1	-	E
78a x 101d	-	1	-	E
80b x 72b	-	1	-	E
80b x 73c	1	-	-	E
80b x 85c	-	1	-	E
80b x 101d	1	-	-	E
85c x 87a	-	-	1	E
85c x 101d	-	1	-	E
85d x 78a	-	-	1	E
85d x 89a	-	1	-	E
85d x 96a	-	1	-	E
86a x 87a	-	-	1	E
86a x 101d	-	1	-	E
86e x 71a	1	-	-	E
87a x 71a	-	-	1	E
87a x 101d	-	1	-	E
89a x 96a	-	1	-	E
92a x 71a	1	-	-	E
94a x 68a	-	1	-	E
96a x 66a	2	-	-	E
96a x 78a	1	-	-	E
101b x 72a	-	-	1	E
101b x 85c	-	-	1	E
101b x 87a	-	-	1	E
101f x 68a	-	-	1	E
101t x 71a	-	-	1	E
101z x 71a	1	-	-	E
Yellow Hybrids				
Illinois				
d101 x 71a	-	1	-	E
d101 x 85d	-	-	1	E
d101 x 89a	-	-	1	E
f101 x 85a	-	1	-	E
g101 x 66a	-	1	-	E
g101 x 72b	-	1	-	E
g101 x 73c	-	1	-	E
g101 x 85c	-	-	1	E
103a x 71a	1	-	-	E
104c x 71a	1	-	-	E
Indiana				
Golden Cross Bantam (P39 x P51)	-	1	7	R
Improved Golden Cross Bantam (P39A x P51B)	-	1	-	R
Hoosier Bantam (39G x 51B)	-	2	-	E
Hoosier Gold (39-10 x 8)	-	1	1	E
Indigold (P14 x P51)	-	3	1	R
Purgold (P31 x P14)	-	-	3	R
P31 x P51B	-	1	-	E
1308 x P51	-	-	1	E
1308 x P51B	-	-	1	E
1313-1-1 x P51	-	-	1	E
1313-2 x P39	-	1	-	E
1313 x 1308	2	1	1	E
8482 x P14	-	-	1	E

Table 2.--(Continued)

Source and Hybrid Pedigree	Number of Tests			Present Status of Hybrid1/
	Resistant	Intermediate	Susceptible	
Yellow Hybrids				
Indiana				
(P39 x P51) x I45	-	-	2	E
(P39 x P14) x P51	-	1	-	E
(P39 x 1313) x P51	-	1	-	E
331 x 535	1	-	-	E
334 x 344	-	1	-	E
350 x 12	-	-	1	E
350 x 386	-	1	-	E
405 x 378	-	1	-	E
Iowa				
Ioana (IP39 x I45)	2	5	1	R
Ioglen (IP51 x I45)	-	1	-	R
IP39 x ABE	-	1	-	E
ABE x 60	-	-	1	E
467 x ABE	-	1	-	E
ABE x 2174	1	-	-	E
C30 x 2021	-	-	1	E
467 x 2000	-	1	-	E
467 x 2166A	1	-	-	R
467 x 5055	-	1	-	E
467 x 6014	-	1	-	E
2000 x 2174	1	-	-	E
2010 x 2025	-	1	-	E
2019 x 467	-	1	-	E
2019 x 051K2A	-	1	-	E
2021 x 2025	-	1	-	E
2166A x 2174	1	-	-	E
2174 x 2025	-	1	-	E
Yellow Hybrids				
Iowa				
2174 x 5055	1	-	-	E
5027 x 5070	-	1	-	E
5037 x 2025	-	1	-	E
5070 x 467	-	1	-	E
5070 x 5055	-	1	-	E
6014 x 2000	1	-	-	E
Wx1253-1 x 2166A	2	-	-	E
Wx1253-1 x 2174	2	-	-	E
2000 x Wx1253-1	2	-	-	E
Ohio				
Ohiogold 1				
(P39 x 14) x 51K2	-	3	-	R
Ohiogold 2 (G192 x 51K2)	2	-	-	RC
Ohiogold 3				
(P39 x 14) x 51K1	-	3	-	R
Ohiogold 4				
(IP39 x I45) x 51K2	3	-	-	RC
(IP39 x I45) x E13-182	1	-	-	E
26 x 51	1	-	-	E
I45 x E13	-	-	1	E
51K2 x I45	1	-	-	D
180 x 51K2-123	1	-	-	E
(G192 x P39) x E13	-	1	-	E
(G192 x P39) x E13-167-1	1	-	-	E
(G192 x P39) x 51K1	-	1	-	E
(G192 x P39) x 51K2	-	-	1	E
(BE x 51K1)3-1-1 x P39	1	-	-	E

Table 2.--(Continued)

Source and Hybrid Pedigree	Number of Tests			Present Status of Hybrid[1]
	Resistant	Intermediate	Susceptible	
Yellow Hybrids				
Ohio				
(BE x 51K1)3-1-1 x 51K1	1	-	-	E
(BE x 51K1)3-1-1 x 51K2	-	1	-	E
(BE x 51K1)3-1-1 x G192	1	-	-	E
(BE x 39K1)3-1-1 x P51	-	1	-	E
BPISAE-South Carolina				
Kiawah Yellow	2	3	-	R
MC 76 Topcross	-	1	-	R
MC 78 Topcross	-	1	-	R
Country Gentleman Hybrids				
Illinois				
1f x 1s	-	1	-	E
5a x 10a	-	1	-	R
6a x 8c	-	1	-	R
8j x 1f	-	-	1	E
8j x 1s	-	-	1	E
8j x 43a	-	1	-	E
10g x 27a	1	-	-	E
27a x 31a	1	1	-	R
31a x 10g	-	1	-	E
43a x 1f	-	1	-	E
43a x 1s	-	1	-	E
Indiana				
FR14 x 347	-	-	1	E
FR34 x FR14	1	-	-	E
Country Gentleman Hybrids				
Indiana				
FR34 x 22-2	1	-	-	E
FR34 x 6355	-	1	-	E
FR34 x 7212	-	1	-	E
FR34 x 8344	1	-	-	E
347 x 22-2	1	-	-	E
347 x FR34	1	2	-	E
347 x 7212	-	-	1	E
347 x 8203	-	-	1	E
347 x 8344	1	-	-	E
6684 x 6355	1	-	-	E
6691 x FR34	-	1	1	E
6691 x 8035	1	-	1	E
7212 x FR14	-	-	1	E
7620 x FR34	-	-	2	E
7620 x 6691	-	1	1	E
7710 x 6355	-	1	-	E
7710 x 8203	-	-	1	E
8035 x FR34	1	1	-	E
8035 x 7620	-	1	-	E
8089 x 8203	-	1	-	E
8111 x 6355	-	-	1	E
8203 x 22-2	1	-	-	E
8203 x FR34	1	1	-	E
8203 x 6355	2	-	-	E
8344 x FR14	-	1	-	E
8344 x 7212	1	-	-	E

Table 2.--(Continued)

Source and Hybrid Pedigree	Number of Tests			Present Status of Hybrid[1/]
	Resistant	Intermediate	Susceptible	
Country Gentleman Hybrids				
Indiana				
8344 x 8203	-	1	-	E
(8344 x 8203) x (6355 x 34)	-	1	-	E
C3 (7212 x 7710) x (6355 x 34)	-	-	1	E
C4 (8089 x 8203) x (6355 x 34)	2	2	-	E
C5 (8344 x 30) x (6355 x 34)	-	2	-	E
C7 (8089 x 8344) x (6355 x 34)	-	1	1	E
C9 (7710 x 8203) x (6355 x 34)	-	1	-	E
C12 (7212 x 8344) x (6355 x 34)	-	1	1	E
C15 (7212 x 8344) x (6355 x 34)	2	-	-	E
R5 (8344 x 30) x (8203 x 6355)	2	1	-	E
R7 (8089 x 8344) x (8203 x 6355)	-	-	2	E
R11 (8089 x 34) x (8203 x 6355)	2	1	-	E
R18 (34 x 7710) x (8203 x 6355)	-	2	-	E
Iowa				
Iogent 11	-	1	-	R
Country Gentleman Hybrids				
Iowa				
Iogent 27	-	1	-	R
Iogent 27 x 4137	-	1	-	E
4011 x 4024A	-	-	1	E
4011 x 4044	1	-	-	E
4011 x 4122B	-	1	-	E
4024A x 4040A	-	1	-	E
4024A x 4060	1	-	-	E
4130 x 4011	1	-	-	E
4135 x 4024A	-	1	-	E
4137 x 4011	1	-	-	E
Golden Country Gentleman Hybrids				
Iowa				
2508 x 2730	1	1	-	R
2765 x 2760	-	1	-	E
2765 x 2784	1	-	-	E
2785 x 2809	1	-	-	E
Evergreen Hybrids				
Illinois				
13b x 11d	-	-	1	R
57b x 11d	-	-	1	E
57b x 13b	-	-	1	E
Ohio				
44 x 45	-	1	1	E

Table 2.--(Continued)

Source and Hybrid Pedigree	Number of Tests			Present Status of Hybrid[1]
	Resistant	Intermediate	Susceptible	
Evergreen Hybrids				
BPISAE-South Carolina				
Edisto	1	1	-	R
Kiawah White	1	-	-	R
Evergreen Hybrids				
BPISAE-South Carolina				
MC 80 Topcross	1	1	-	R
MC 82 Topcross	1	-	-	R

---

[1] Present status of the strain as given by the breeder.
E - experimental, R - released to commercial trade, RC - release contemplated,
D - discontinued or discarded by originating breeder, may still be carried by others.

Table 3.--Experimental crosses between tested inbreds from different breeders. Crosses made by various members of the Bureau of Plant Industry, Soils, and Agricultural Engineering and the Bureau of Entomology and Plant Quarantine.

Hybrid Pedigree	Number of Tests		
	Resistant	Intermediate	Susceptible
Yellow Crosses			
P39 x I45	-	1	-
I45 x P51	-	1	1
I45 x 76a	1	-	-
I45 x 85d	-	2	-
I45 x 91a	-	1	-
I45 x d101	-	1	-
I45 x 1313-1-2	-	1	-
I45 x La2W	1	1	-
P51 x 85d	1	-	-
66a x I45	-	1	-
66a x La2W	-	-	1
72a x I45	-	-	1
72a x 85d	-	2	-
72a x 89a	-	-	1
72a x 1308	-	-	1
76a x P51	1	-	-
78a x I45	-	1	-
85d x P51	-	1	-
96a x I45	-	2	-
96a x La2W	-	1	-
107a x P39	-	1	-
107a x I45	-	1	-
107a x P51	-	1	-
1313-1-2 x 85d	-	-	1
1313-1-2 x 96a	-	-	1
La2W x P51	1	1	-
La2W x 72a	-	1	-
La2W x 85d	1	1	-
La2W x 89a	-	-	1
La2W x 91a	-	1	-
La2W x 1308	-	1	-
Country Gentleman Crosses			
Ill. 5 x FR34	1	-	-
Ill. 8 x FR34	-	1	-
200K x 8344	-	1	-
4011 x 200K	-	-	1
4011 x 8344	1	-	-
4024A x 200K	-	-	1
4024A x 8344	-	1	-
Evergreen Crosses			
14n x 2d-2d-Od	4	-	-
14n x 81-1	2	-	-
14n x 471-U6	1	-	-
81-1 x 2d-2d-Od	4	-	-
81-1 x 471-U6	2	-	-
471-U6 x 2d-2d-Od	3	-	-
471-U6 x H33A	-	2	-
471-U6 x H84	-	2	-
471-U6 x 119	-	2	-
471-U6 x 1071	-	1	1
471-U6 x 471-U12	-	2	-
471-U6 x S5017-1	1	2	-
471-U12 x H84	-	2	-
H84 x 5017-1	1	-	1
1071 x H84	-	-	2
S5017-1 x H84	-	2	-
S5017-1 x 119	-	2	-
S5017-1 x 1101(8)2	-	2	-

UNIVERSITY OF FLORIDA
3 1262 09239 2058

Table 4.--Reaction to earworm injury by commercial varieties and hybrids tested for resistance to the corn earworm.

Variety	Number of Tests		
	Resistant	Intermediate	Susceptible
Aristogold Bantam	2	-	-
Aristogold Bantam Evergreen	1	1	-
Aunt Mary's Sweet	-	2	2
Golden Grain	-	1	-
Honey June	-	2	-
Hybrid Stowell's	-	1	-
Mosshart Sugar	2	-	-
Oregon Evergreen	2	2	-
Papago Sweet	2	-	-
Stowell's Evergreen	-	-	1
Surecropper Sugar	1	1	-
Sweet Snowflake	-	1	1
Texas Evergreen	2	-	-
Top Flight Bantam	-	2	-
Tri State	-	1	-
US34	3	-	-